STUDIES ON BOREAL AGROMYZIDAE (DIPTERA). VII. A NEW *CHROMATOMYIA* MINER ON *VALERIANA*

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Chromatomyia kluanensis, *a new species of the* C. syngenesiae *group, has been bred from* Valeriana *in the St. Elias Mountains (Yukon Territory and British Columbia). Additional notes and revised keys to this group are given.*

Chromatomyia kluanensis, *une espèce nouvelle du groupe* C. syngenesiae, *fut élevée de la* Valeriana *dans les montagnes St. Elias (Territoire du Yukon et Colombie britannique). Des notes additionelles et des clefs nouvelles pour ce groupe sont pourvues.*

Chromatomyia kluanensis, *eine neue Art der* C. syngenesiae-*Gruppe, wurde aus* Valeriana *von dem St. Elias-Gebirge (Yukon Territorium und Britisch Kolumbien) gezüchtet. Weitere Beiträge und neue Bestimmungstabellen zu dieser Gruppe werden gegeben.*

In Part V of this series (Griffiths, 1974) I have redefined the genus *Chromatomyia* and referred to it the *syngenesiae*-group which I previously revised (as the *Phytomyza syngenesiae* group) in 1967. The species concepts and nomenclature of that revision have been accepted by all subsequent writers on the group. Important subsequent references include von Tschirnhaus' (1969) morphological studies on three European species, and Sehgal's (1971) description of a new species (*senecionella*) from North America. I gave further records of the latter in Part II (Griffiths, 1972). In this paper I describe a new species bred from *Valeriana* (Valerianaceae) in the St. Elias Mountains. I am confident that this species is monophagous, as I found it on no other plants during three weeks of continuous collecting there in 1972. Since two new species have now been discovered since my 1967 revision, it is appropriate to include here a revised key with worldwide coverage to the *C. syngenesiae* group, as well as the necessary amendment to my previous key to the *Chromatomyia* species of North America. I have also included *C. asteris* (Hendel) in the first key, as I am satisfied from material sent me by M. von Tschirnhaus that this too belongs to the *syngenesiae* group. I was under a misapprehension about the affinities of this species when writing my 1967 revision.

DIAGNOSIS

Revised key to adults of *Chromatomyia syngenesiae* group.

1. First and second antennal articles clear yellow. Coasts of British Isles, Denmark and Germany. On *Aster tripolium* L. ..... *C. asteris* (Hendel)
– First and second antennal articles yellow-brown or darker 2
2. (1) Third antennal article (Griffiths, 1967, Fig. 4) with fringe of conspicuous long white pubescence. Aedeagus as figured by Griffiths (1967, Fig. 5). Spain. On *Lactuca* .. .. *C. aragonensis* (Griffiths)
– Third antennal article with only short pubescence (Griffiths, 1967, Fig. 1) 3
3. (2) Dorsal lobe of aedeagus with pigmented supporting sclerites divergent from base (Griffiths, 1967, Fig. 18); distal tubule bent upwards only at apex (Griffiths, 1967, Fig. 16). Europe, Africa, Asia. Polyphagous ..... *C. horticola* (Goureau)

– Aedeagus not as above; supporting sclerites not or at most very weakly differentiated 4

4. (3) Distal tubule of aedeagus shaped as Fig. 1 (also Griffiths, 1967, Fig. 9, 12), bent upwards at single point before about apical third 5

– Distal tubule shaped otherwise 7

5. (4) Basal sclerites of aedeagus rather broad, well pigmented distally (Fig. 1); gland at base of ejaculatory apodeme enlarged (Fig. 3-4). St. Elias Mountains. On *Valeriana* ..... *C. kluanensis* n. sp.

– Basal sclerites narrower, weakly pigmented distally (Griffiths, 1967, Fig. 9, 12); gland at base of ejaculatory apodeme smaller 6

6. (5) Wing length not exceeding 1.9 mm (♂) or 2.05 mm (♀). Sac below distal tubule of aedeagus papillose, somewhat sclerotized along hind margins (Griffiths, 1967, Fig. 9; von Tschirnhaus, 1969, Fig. 1). Northern and Central Europe. On *Taraxacum* and *Leontodon* ..... *C. farfarella* (Hendel)

– Wing length normally greater. Sac below distal tubule of aedeagus not papillose, with hind margins largely unsclerotized (Griffiths, 1967, Fig. 12). Europe, Canaries, North America, Australia, New Zealand. Mainly on Compositae ..... *C. syngenesiae* Hardy

7. (4) Distal tubule of aedeagus gradually upcurved (Griffiths, 1967, Fig. 7). Canaries .. .. *C. lindbergi* (Spencer)

– Distal tubule sinuate (Sehgal, 1971, Fig. 123; Griffiths, 1972, Fig. 13). Canada and Alaska. On *Senecio* and *Petasites* ..... *C. senecionella* (Sehgal)

Amendment to key to North American species of *Chromatomyia* (Griffiths, 1974: 39).

3. (2) Distal tubule of aedeagus sinuate (Sehgal, 1971, Fig. 123; Griffiths, 1972, Fig. 13) ..... *C. senecionella* (Sehgal)

– Distal tubule shaped as Fig. 1 (also Griffiths, 1967, Fig. 12), bent upwards at single point before about apical third 3a

3a. (3) Basal sclerites of aedeagus rather broad, well pigmented distally (Fig. 1-2); gland at base of ejaculatory apodeme enlarged (Fig. 3-4) ..... *C. kluanensis* n. sp.

– Basal sclerites narrower, weakly pigmented distally (Griffiths, 1967, Fig. 12); gland at base of ejaculatory apodeme smaller ..... *C. syngenesiae* Hardy

Key to *Chromatomyia* mines on Valerianaceae.

1. Posterior spiracles of puparium and third instar larva small, with 6-12 bulbs .... *C. horticola* (Goureau)

Reported on *Valeriana, Valerianella* and *Kentranthus* in Europe (Griffiths, 1967). Kaltenbach's (1860) *Phytomyza Fediae*, bred from *Valerianella locusta* (L.) in Germany, is assumed to be synonymous with *horticola* (see Griffiths, 1967).

– Posterior spiracles of puparium and third instar larva larger, with 15-22 bulbs (Fig. 5). St. Elias Mountains. On *Valeriana* ..... *C. kluanensis* n. sp.

TREATMENT OF SPECIES

Chromatomyia kluanensis new species

Adult. – Conforming with my general description of the *syngenesiae* group (Griffiths, 1967: 2).

Anterior ori vestigial or absent. Pubescence of third antennal article short; arista with thickened basal section 2/5 to slightly less than half arista length (angularly delimited from terminal

section in holotype male, but not in female paratypes). Acr completely absent; 2-3 presutural ia; 0-1 postsutural ia. Costal ratio mg_2/mg_4 1.55-1.9. Wing length: ♂, 2.6 mm; ♀, 2.6-2.8 mm. Length of hind metatarsus: ♂, 0.31 mm; ♀, 0.325-0.34 mm.

Frons largely yellow; face clear yellow or slightly ochreous tinged, with variable degree of infuscation in antennal pits. Palpi black. Costa brown or ochreous. Basal cone of ovipositor (♀) grey dusted on basal 2/3 to 3/4.

Aedeagus as Fig. 1-2; basal sclerites rather broad, well pigmented distally; dorsal lobe (Überdachung) pigmented only at lateral angles, uncleft but with impressed central furrow (supporting sclerites not visible in transmitted light, but indicated by lines of diffraction in lateral view, as shown in Fig. 1); distal tubule shaped as in *syngenesiae* and *farfarella*, bent upwards at single point before about apical third; sac below distal tubule (Halbballon) not papillose, with hind margins unsclerotized. Ejaculatory apodeme as Fig. 3-4, rather small with enlarged gland at base.

Puparium and third instar larva. – Differing from those of other species of the *syngenesiae* group in respect of the larger spiracles with more numerous bulbs. Anterior spiracles knob-shaped, with 16-20 irregularly distributed bulbs; posterior spiracles on rather large conical projections, knob-shaped, with 15-22 bulbs in irregular stellate pattern (Fig. 5). Puparia red-brown to almost black, 2.45-2.65 mm long.

Mine. – Larvae leaf-miners on *Valeriana*. Mine (Fig. 6) entirely linear, 12-27 cm long, remaining narrow terminally (less than 2 mm wide), much convoluted in smaller leaves; faeces deposited as discrete particles, widely separated (mostly by over 2 mm) in terminal part of mine; mines formed entirely on upper surface of leaf (or partly full-depth in thinner leaves), mostly with terminal channel in petiole. Puparium with its ventral surface adjacent to surface of leaf, with its anterior spiracles projecting ventrally through epidermis, in most cases formed near base of petiole (on upper or lower surface); on lower surface if formed in leaf blade.

Types. – Holotype ♂, 2 ♀♀ paratypes from larvae and puparia 18-28.vii.72 on *Valeriana capitata* Pall., near S end Kluane Lake (4000-4500 feet elevation), Yukon Territory, emerged 15.viii.72 (1 ♀) and 3-5.v.73, leg. D. E. & G. C. D. Griffiths. 1 ♀ paratype from larvae and puparia 27.viii.69 on *Valeriana sitchensis* Bong., Chilkat Pass (3000 feet elevation), British Columbia, emerged 9.v.70, leg. G. C. D. Griffiths.

Remarks. – The sample from which the type series was bred was collected from the willow zones of the Slims Tundra and Outpost Mountain, and from the canyon formed by Williscroft Creek. All parasites from this sample emerged the following spring, as did two out of the three flies obtained. Thus it seems likely that this species is univoltine for the most part.

In Europe the polyphagous *horticola* is the only *Chromatomyia* which has been bred from *Valeriana*. This is unlikely to be confused with *kluanensis*, as there are obvious differences between the larval (and puparial) spiracles, as well as the aedeagus, of these species.

The holotype of *kluanensis* will be deposited in the Canadian National Collection (Ottawa).

Additional notes on *C. syngenesiae* group

Von Tschirnhaus (1969) has described differences in the arista between *C. farfarella* (Hendel) and *C. horticola* (Goureau). In both *C. syngenesiae* Hardy and *C. kluanensis* n. sp. the length of the thickened basal section of the arista is intermediate between that described for the above species, and whether or not this basal section is angularly delimited (winklig abgesetzt) from the terminal section varies between individuals.

In Part II (Griffiths, 1972) I referred to the fact that *C. syngenesiae* Hardy had been found only once in the City of Edmonton, Alberta. After failing to find this species for several years, I recently found a few larvae on a weed *Senecio* in my garden here. I also recently obtained a

sample from a native *Senecio* in the western part of the Swan Hills, which now becomes the most northerly known locality for *syngenesiae* in North America. These northern specimens seem to have, on average, more acrostichal setulae than in other populations. The data is as follows: 1 acr (1 ♂ Edmonton), 3 acr (1 ♂ 1 ♀ Swan Hills), 4 acr (1 ♂ Swan Hills), 5 acr (2 ♀♀ Swan Hills), 6 acr (1 ♀ Swan Hills), 8 acr (1 ♀ Edmonton). I can find no other differences from European *syngenesiae*, and continue to hold the opinion expressed in Part II that this species has been introduced into North America with horticultural plants. The full data of this new Alberta material is as follows.

2 ♂♂ 4 ♀♀ from puparia 14.vii.73 on *Senecio indecorus* Greene, 2½ miles S Goose Mountain (3850 feet elevation), Swan Hills, Alberta, emerged 20-25.vii.73, leg. G. C. D. Griffiths. 1 ♂ 1 ♀ from larvae 27.ix.73 on *Senecio vulgaris* L., Edmonton (house garden near University), Alberta, emerged 20.x.73, leg. G. C. D. Griffiths.

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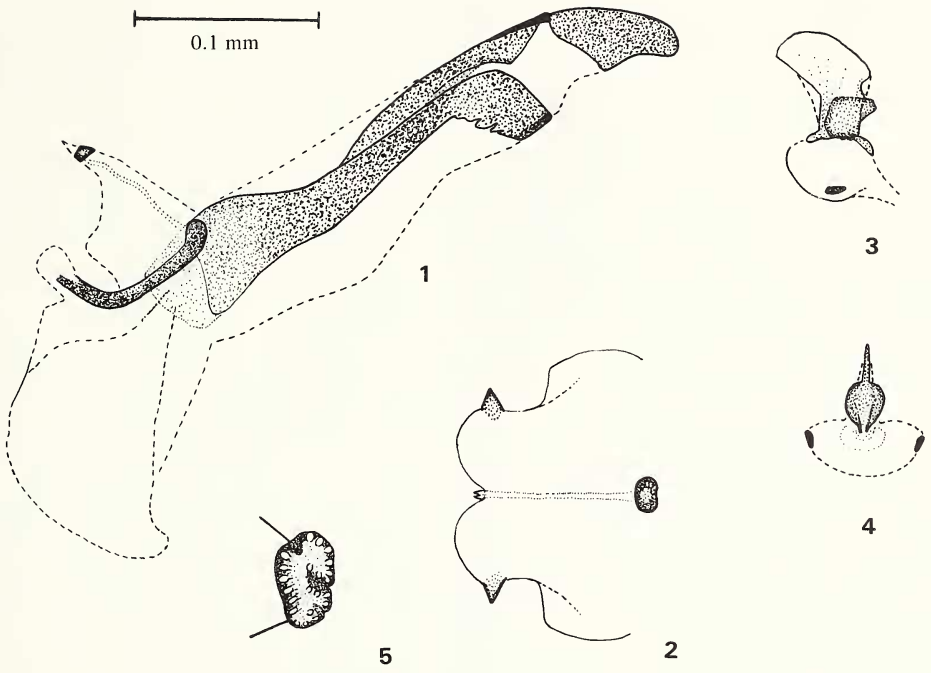

Fig. 1-4. *Chromatomyia kluanensis* n. sp., holotype ♂: 1, aedeagus in lateral view; 2, dorsal lobe of aedeagus in dorsal view; 3, ejaculatory apodeme (viewed perpendicular to blade); 4, ejaculatory apodeme (viewed in plane of blade). Fig. 5. *Chromatomyia kluanensis* n. sp., posterior spiracle of puparium in ± posterodorsal view.

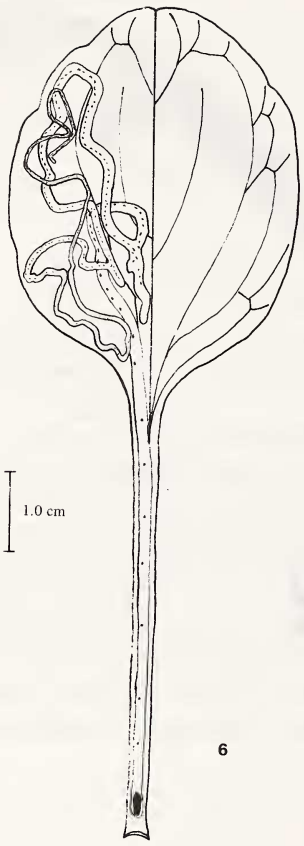

Fig. 6. Leaf of *Valeriana capitata* Pall. with mine of *Chromatomyia kluanensis* n. sp.